Math 182 Quiz 11 Name: _____

March 18, 2003

Show all work for credit.

Leave all answers as exact answers unless otherwise stated.

1. Given the sequence $\{a_n\} = \left\{\dfrac{n+(-1)^n}{n}\right\}_{n=1}^{\infty}$, use the ε, N definition of the limit of a sequence to show that $\lim\limits_{n\to\infty}\{a_n\} = 1$.

2. Find the smallest value of N such that $\forall n > N$, $\left|\left\{\dfrac{n^2-1}{n^2}\right\} - 1\right| < \varepsilon$,for $\varepsilon = .0001$.

3. For each of the following series, state if it is geometric or not. If it is geometric, then give the values for r and a.

   (a) $\sum_{n=1}^{\infty} en^{n-1}$

   (b) $\sum_{n=1}^{\infty} 3(1/3)^{n-1}$

4. Does the series $3\sum_{n=1}^{\infty} e^{-(n-1)}$ converge? If so, what does it converge to?

5. Does the series $\sum_{n=3}^{\infty} \frac{1}{n+1}$ converge? If so, what does it converge to?